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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,591	12/15/2000	Jim Otter	60,246-116	1229

26096 7590 01/14/2003

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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 01/14/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

091738,591

Applicant(s)

Examiner

Group Art Unit

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE — 3 — MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 12/11/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-19 is/are pending in the application.
- Of the above claim(s) 8-19 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-7 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 2
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

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DETAILED ACTION

Election/Restriction

1. Applicant's election without traverse of claims 1-7/ Group I in Paper No. is acknowledged.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. The PTO-498 was sent with the previous Office Action.

Claim Objections

3. Claims 4,5,6 are objected to because of the following informalities: (1) line 2 of claims 4-6, "polar" should be inserted before "particulates" for clarity and consistency. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 3-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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- Claim 3 is vague and indefinite because it is unclear where in the method the heating and cooling steps are carried out, and how they effect the making of the particulated film.
- Claim 4: "heated first surface" lacks proper antecedent basis.
- Claims 5-6: "particulate" lacks proper antecedent basis.
- Claim 6 is vague and indefinite because the meaning of reactants is unclear.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789.

Bentley teaches a heat exchanger part formed by laminating a corrosion-resistant, stable thermoplastic polymer sheet/ film to a metal sheet (carbon steel, aluminum, etc), col. 3, 43- col. 4, 43. In service, the resultant part permits flow of condensed water which is removed from the unit in the presence of a corrosive flue gas. Use of polar particulates on the film is not cited.

Kaneko et al teaches forming similar heat exchanger parts comprising a metal substrate onto which is applied a thermoplastic, corrosion-resistant polymer film, and then applying thereto polar silica particles "in any convenient manner" to increase wettability of the surface and hence process efficiency (col. 1, 30-50; col. 2, 52-63; col. 3, 3-37). Application may be by powders, an aqueous suspension, sol solution, etc. As noted in Example 8, resin-coated panels were squeezed and dried, followed by application of the silica in sol form (a sol being a liquid dispersion of very fine-sized particulates), followed by roller squeezing

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and heating (necessarily including cooling to provide utility to the article), according to claims 3-4.

Both references are directed to forming heat-exchanger parts having surfaces which are corrosion resistant by virtue of a thermoplastic polymeric film (per claim 2) and demonstrate wettability to allow condensate flow. While Bentley et al does not teach application of polar particles, Kaneko et al explicitly teaches to apply such particles for improved wetting, such that one of ordinary skill would have been motivated to apply such polar particles, e.g. silica, to the thermoplastic sheet/film of Bentley et al to provide the advantage of improved wetting and process efficiency.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al by incorporating polar (silica) particles in the corrosion-resistant thermoplastic as taught by Kaneko et al to improve wettability and overall process efficiency.

9. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of McCulloch et al US 3973510.

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Bentley et al and Kaneko et al are cited for the same reasons discussed above, which are incorporated herein. Applying polar particulates by pressing them into an adhesive applied to the surface is not cited.

McCulloch et al is introduced because it discloses the concept of applying silica particles to a binder coated surface to provide thereon a distribution of particles which lowers the coefficient of friction between water and surfaces, in this case, a seagoing vessel. The particles are blown into the tacky adhesive or polymeric binder coating (including thermoplastics, col. 4, 31-36), followed by curing (col.2, 15-22). The blowing of the particles into the tacky coating necessarily "presses" the particles into the adhesive or polymer to cause adhesion. Although not directed to a heat transfer/ exchange component, since both involve the unimpeded flow of water along contacting surfaces, it is the Examiner's position that one of ordinary skill would have looked to analogous particle coating arts which solve the same problems to find ways to attach particles to the heat transfer/ exchange component of Bentley et al in view of Kaneko et al. As to claim 6, while a "mixture of reactants" that polymerize in situ is not explicitly disclosed, it would have been apparent to one of ordinary skill to have used a conventionally known polymer adhesive with a

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cross-linking or hardening agent (resulting in a mixture of reactants) because of the expectation of achieving equivalent results.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al in view of Kaneko et al by applying the particles to a tacky adhesive layer and curing as taught by McCulloch et al in order to form a polymer-coated surface with polar silica particles therein.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Linford US 6132801.

Bentley et al and Kaneko et al are cited for the same reasons discussed above, which are incorporated herein. Coating an outer surface of the polar silica particulates is not cited.

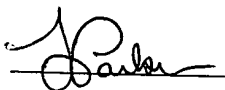
Linford teaches on col.1, 33-54 and col. 5, 1-8 that the application of a polymeric coating on silica and other inorganic particles "allows a more robust coating attachment" in micro particle/ polymer composite materials to prevent de-bonding of the particles. Since Bentley et al in view of Kaneko et al teaches silica particles in a polymeric base, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process

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of Bentley et al in view of Kaneko et al by coating the silica particles as taught by Linford to provide the benefits of a stronger attachment of the particles to the base, thereby reducing de-bonding of the crucial silica particles and resulting in a longer useful lifetime of the parts.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 2936814 and US 5916635 further illustrate the state of the art.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.



**FRED J. PARKER
PRIMARY EXAMINER**

Fred J. Parker

January 8, 2003

9-738591